All devices form a mesh network: if one station cannot communicate with another, a station in between might forward messages, thus increasing the range of all components.

Each HexaBus device also runs a webserver. Customers can easily configure the devices using a normal web browser. The device will send the configuration page with all available settings to the user’s browser. The configuration settings are stored in the device and will not be reset after a power outage.

The devices can receive commands from a laptop computer with a radio USB stick, or any other IPv6-ready device. A PV on-site consumption optimization runs on the website and switches devices according to the pre-computed schedule.

We also provide an integrator’s board for device vendors. This simple component integrates a wireless communication chip with the HexaBus microcontroller. It can be integrated in other devices such as washing machines, dishwashers or shutter drives. Currently, we provide switchable power plugs, the integrator’s board and a USB gateway.

Overview of the mySmartGrid components: central services provide data APIs and a website. The other components are installed at a customer’s site and communicate over the internet.
Amperix installation: The Amperix has been designed as an add-on solution and is easy to install.

mySmartGrid mobile website: when accessed from mobile phones, an adapted view with intuitive icons is offered.

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The mySmartGrid infrastructure – a flexible end-to-end energy information system

The mySmartGrid infrastructure provides flexible building blocks for energy information systems. Ranging from metering components to home automation systems, the platform can be integrated in various environments. Most components are available under a liberal open source license and can easily be adopted to meet customer needs.

Amperix – simple yet effective power metering

The Amperix is a power meter based upon a wireless router. It can sense power from up to six sensors and wirelessly transmit the measurements to a website.

Amperix can handle up to six current sensors, ranging from current clamps (hall effect devices for very simple installation) over S0-based devices to RS485-based DIN-rail meters. It is also possible to measure several lines simultaneously, i.e. to record PV production and local power consumption. It supports both single-phase and three-phase lines up to 500 amps.

The Amperix sends the measurements to a mySmartGrid-enabled website. Customers can access the website in order to visually explore their power consumption and PV production. Aggregated visualizations help to identify trends and to save energy.

In addition, the Amperix provides a local interface for retrieving up-to-date measurements. This interface is updated once per second. The data can also serve as an input to local power optimization strategies, i.e. to improve local consumption of PV power.

Based on Linux, the Amperix is a completely open product. The software can be modified in order to meet specific requirements. Its modular hardware design also allows the integration of arbitrary interfaces to third-party systems.

mySmartGrid website – a visual environment for data exploration

The mySmartGrid website is a showcase for our website kit. It contains various modules for displaying and analyzing both power consumption and production. The website also integrates monitoring functionality where comfortable standard notifications are offered as well as extensively customizable settings for advanced users.

Production and consumption can be displayed in various configurations, i.e. a trend diagram which compares this week’s consumption with the week before. All charts are customizable by the user. It is easy to increase the level of detail by zooming in with a mouse-click.

The website also contains various social network tools, i.e. a blog and a forum. It is possible to render the webpage in other designs and integrate it in corporate webpages.

The back-end offers a comprehensive support infrastructure. It comprises of a trouble ticket system that is linked to the website administration backend. Technicians can quickly remote-check if devices are working properly and which problems may have occurred.

Most errors can be fixed from remote by allowing technicians to access and repair software and configuration issues over a secure internet connection.

HexaBus – the internet-enabled home automation system

Current home networks are based on internet protocols. We firmly believe that a home automation system must be based on internet protocols in order to integrate with your computer.

Based on this idea we developed HexaBus, an IPv6-ready bus system. This allows customers to configure devices using their normal web browser. Devices can communicate within the home, but also reach the internet if necessary. On the other hand, we managed to compress this functionality on a small 8-bit microcontroller. These devices are cheap, allowing us to offer HexaBus components at a very attractive price. The HexaBus integrates seamlessly in existing home networks. It uses IPv6 to communicate with other devices. The HexaBus is a wireless bus system, optimized for range in buildings (868 MHz).